


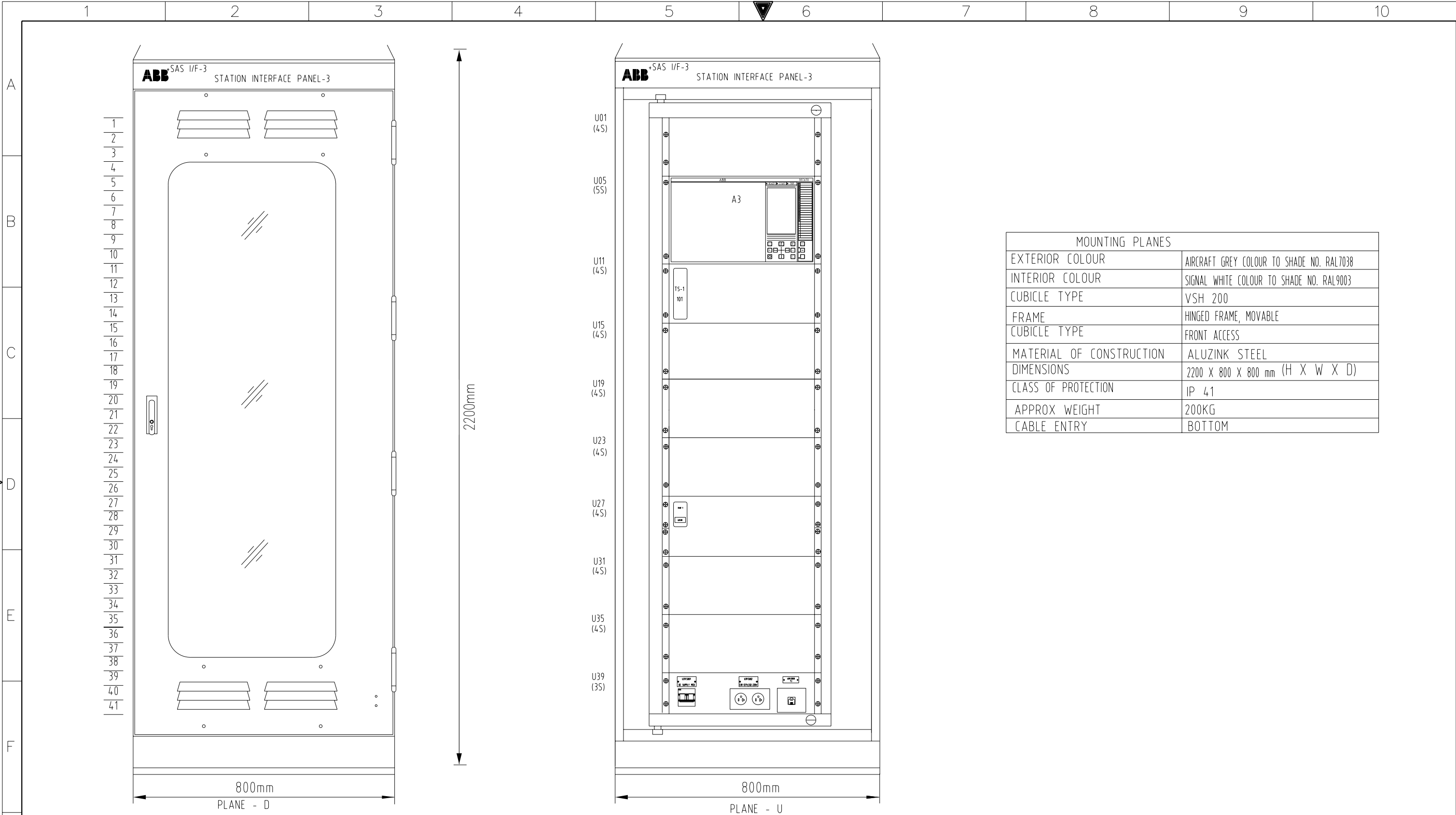


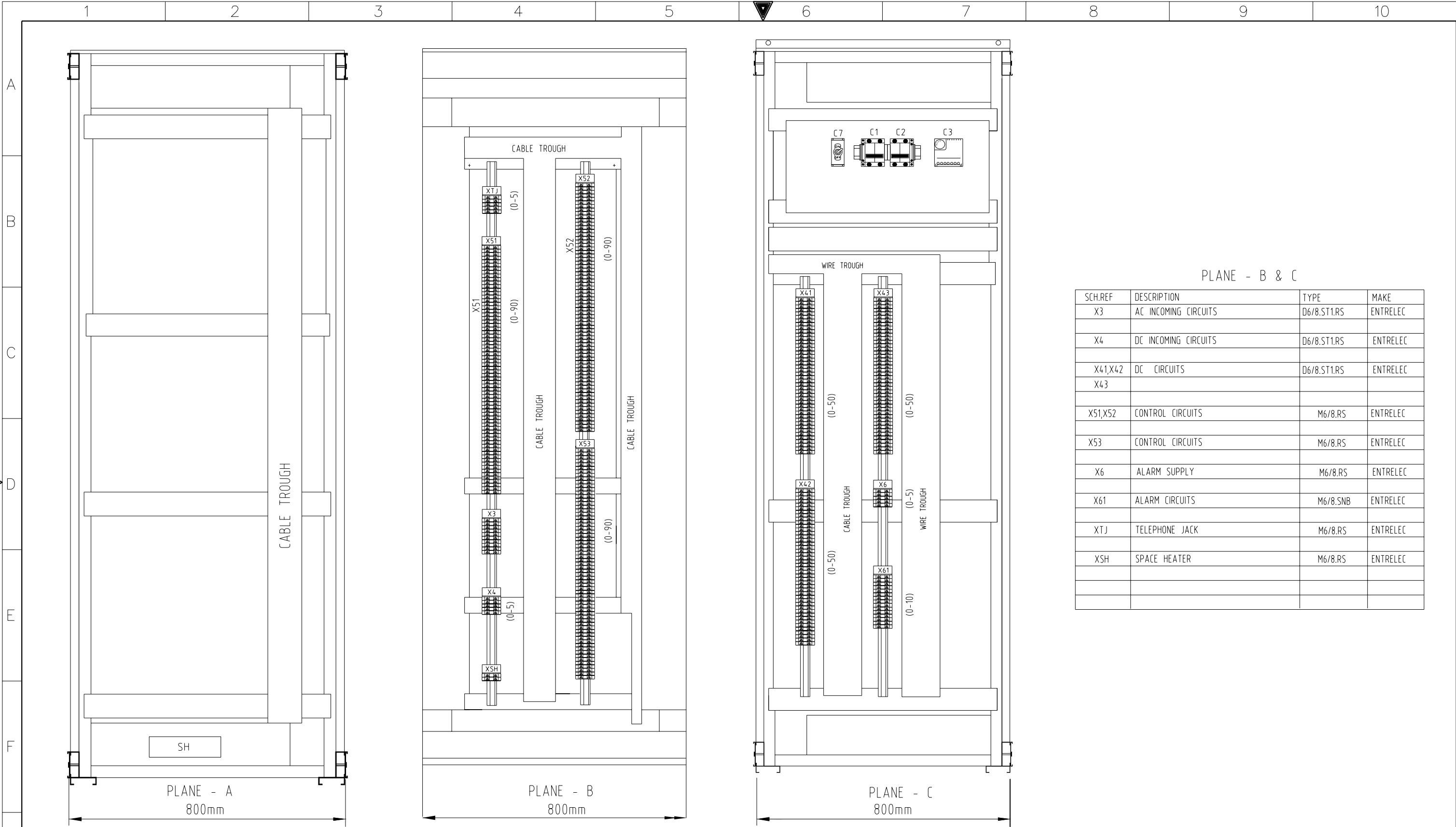
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REV. NO.	DATE	DESCRIPTION				


ASSEMBLY DRAWING	
SAS INTERFACE PANEL +SAS I/F-3	
S/S 8709	S-13656
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
P	C421	CD-323014		SHT	CONT.
				G01	G02
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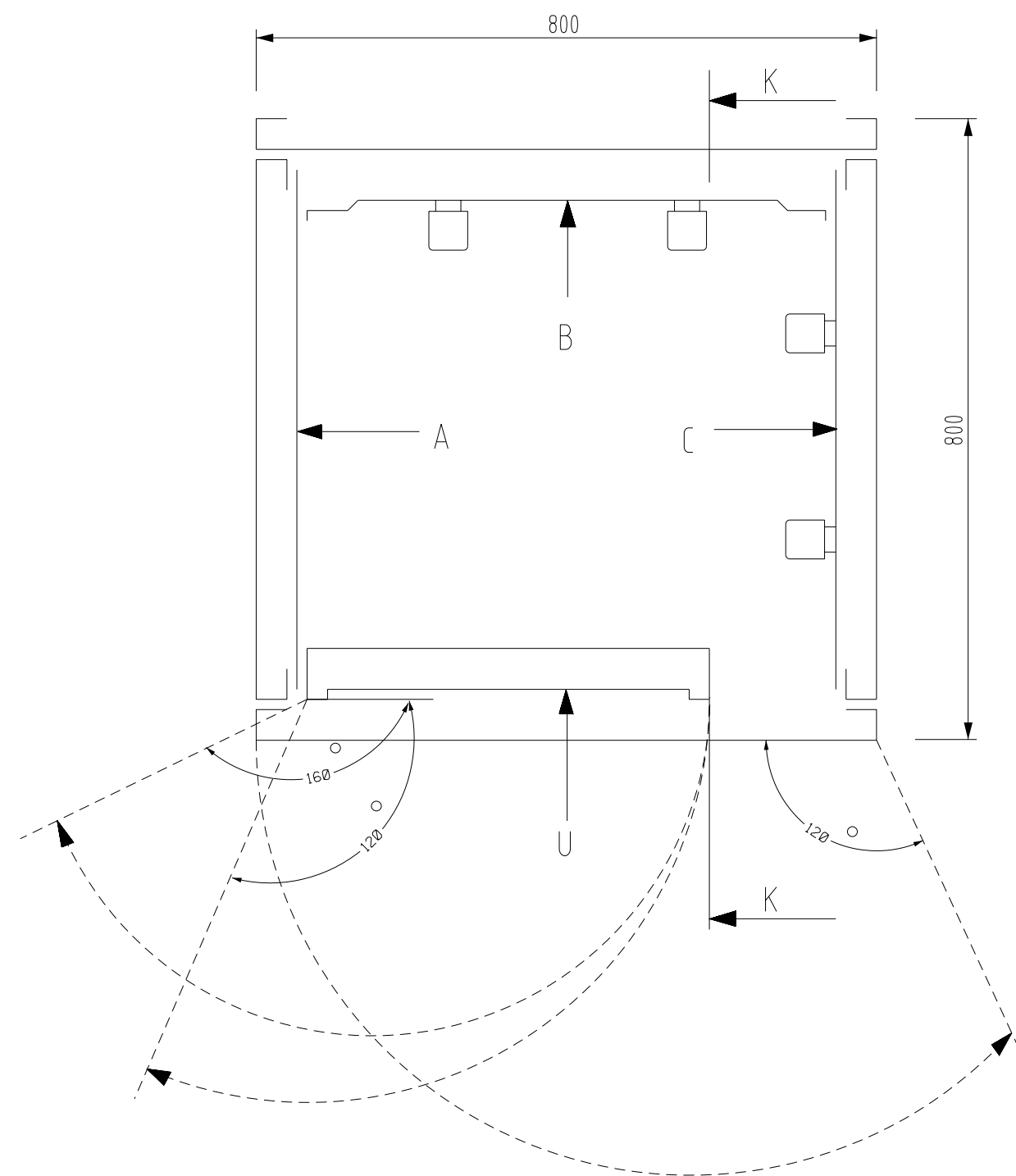
PLANE - B & C

SCH.REF	DESCRIPTION	TYPE	MAKE
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4	DC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X41,X42 X43	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51,X52	CONTROL CIRCUITS	M6/8.RS	ENTRELEC
X53	CONTROL CIRCUITS	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>										
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	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA						G02 G03		00		

NG/D2-D (2012/01)

DMS VECTOR NGD200



AS-BUILT BY _____ DATE _____		CONTRACT NO. 1113113/00		JOB ORDER NO. S-13656	
			DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		
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REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>	

ASSEMBLY DRAWING	
SAS INTERFACE PANEL	+SAS I/F-3
S/S 8709	S-13656
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
P	C421	CD-323014	SHT	CONT.	00
			G03	G04	

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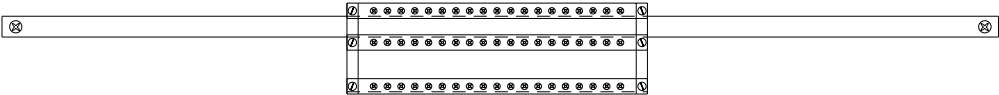
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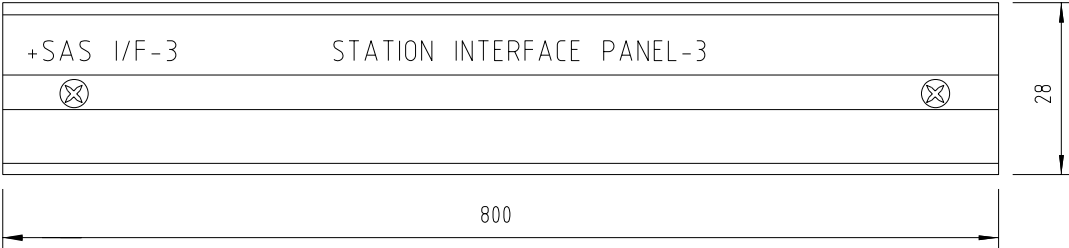
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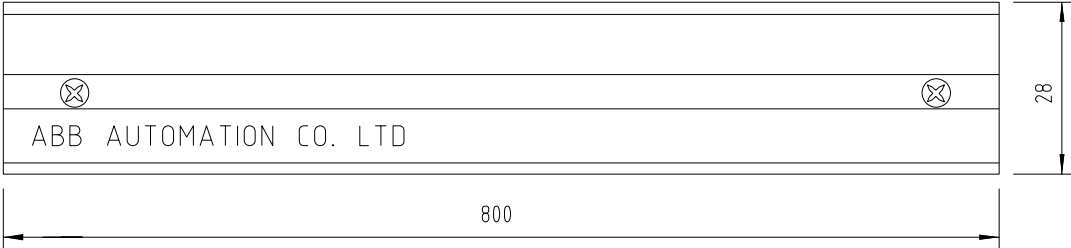


TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL



U PLANE BOTTOM LABEL



MANUFACTURING LABEL

ABB

ABB Automation Co.Ltd.

PROJECT

: National Grid SA - S/S 8709

ORDER REFERENCE

: 2875 RF S13656

YEAR OF MANUFACTURE

: 2013


PANEL NO.





: +SAS I/F-3

DRAWING NO.

: S13656-CD-323015

MADE IN THE KINGDOM OF SAUDI ARABIA

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NG/D2-D (2012/01)




DMS

VECTOR





NGD200

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A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN		
				STATION INTERFACE PANEL-3									
	1	U05.5001	A3	STATION COMMON ALARM SWITCHING EQUIPMENT WITH FOLLOWING SPECIFICATION		291 TO 296	1	REC 670	ABB	1MRK 002814-AC	SWEDEN		
B				AUX : EL=90-250V DC									
				FREQ : 50/60HZ									
				BINARY INPUT : 14 NOS(PER CARD 16 INPUTS RL=110-125DC)									
C	2	U11.101	TS-1	TEST SWITCH FOR REC 670 (A3)		245	1	RTXP18	ABB	RK 926 115-AN	SWEDEN		
D	3	U27.101	74IF	DUAL TARGET RELAY (REVERSE FLAG) (A1 DC FAIL/SPARE)		245	1	RXSF1	ABB	RK 271 019 AN	SWEDEN		
				CONTACTS :1NO+2NC PER COIL									
				AUX.VOLT :1NO+2NC PER COIL									
E	4			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		216	1	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY		
		U39.5001	Q1	Q1 IF+ SUPPLY							FRANCE		
	5	U39.5002	C01	CONVENIENCE OUTLET 10A, 127V AC		211	1	USM45 & USMS45	LEGRAND	74140 & 74180			
F			C02	CONVENIENCE OUTLET 10A, 220V AC									
			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		211	2	S202-C10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY		
	6		C3	THERMOSTAT FOR SPACE HEATER, 5-60 C		211	1	SK 3110	RITTAL	SK 3110	THIWAN		
G	7	U39.5003	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410	SWEDEN		
	8		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101			
	9		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN		
H	10			INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		211	1	T-4	SUNON	SP-20W			
	11		SH	SPACE HEATER, 150w, 120V, 60Hz		211	1	MICA	GRUPPO	1FZEK 006 C001	ITALY		
I	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa				
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NG/D2-D (2012/01)													
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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																								
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	CLIENT : National Grid sa																																																																															
	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																															
	SUBSTATION : S/S 8709																																																																															
E	CONTRACT NO. : 11131113/00																																																																															
	TITLE : Schematic Drawing +SAS I/F-3																																																																															
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
















































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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
	EARTH CONNECTION		PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
	RESISTOR		BREAK CONTACT DELAYED WHEN OPERATING		
	VARIABLE RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		
	RESISTOR WITH PRESET ADJUSTMENT		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		
	CAPACITOR		JUNCTION OF MECHANICAL LINKS		SIGNALLING LAMP
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		AUTOMATIC RESET		MECHANICAL INDICATOR WITH AUTOMATIC RESET
	OPEN CONTACT, MAKE CONTACT		NON-AUTOMATIC RESET		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL AUTOMATIC RESET FROM POSITION 1-2 TO THE NEUTRAL POSITION		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING		RELAY WITH MAKE CONTACT		RELAY WITH MECHANICAL INDICATOR
	SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH CHANGE-OVER CONTACT		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND ONE OPERATED POSITION
	MAKE CONTACT DELAYED WHEN OPERATING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING		ELECTRO-MECHANICAL POSITION INDICATOR WITH ONE DE-ENERGIZED AND TWO OPERATED POSITION
	BREAK CONTACT DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		BELL, BUZZER
	MAIN CONTACT OF A SWITCH DISCONNECTOR		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING		SIREN , HORN
	MAIN CONTACT OF A DISCONNECTOR				

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء  نقل الكهرباء National Grid SA						
		DRAWN BY <u>NSK</u> CHECKED BY <u>JKR</u>		SAS INTERFACE PANEL +SAS I/F-3		INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
		DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____		S/S 8709 S-13656		P		C421	CD-323015	SHT		CONT.
		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA						011		012
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REV. NO.	DATE	DESCRIPTION										

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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
	FILTER		ELEMENT WITH STATIC INPUT		NEGATOR
	HIGH-PASS FILTER		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
	BAND-PASS FILTER		ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	VOLTMETER		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
	AMMETER		ELEMENT WITH DYNAMIC NEGATED INPUT		
			ELEMENT WITH INHIBITING INPUT		


AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	GRAPHICAL SYMBOLS FOR DIAGRAMS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid SA</div>				
		DRAWN BY <u>NSK</u> CHECKED BY <u>JKR</u>		SAS INTERFACE PANEL +SAS I/F-3		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
		DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____		S/S 8709 S-13656					SHT	CONT.
		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		P	C421	CD-323015	012	013
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REV. NO.	DATE	DESCRIPTION								

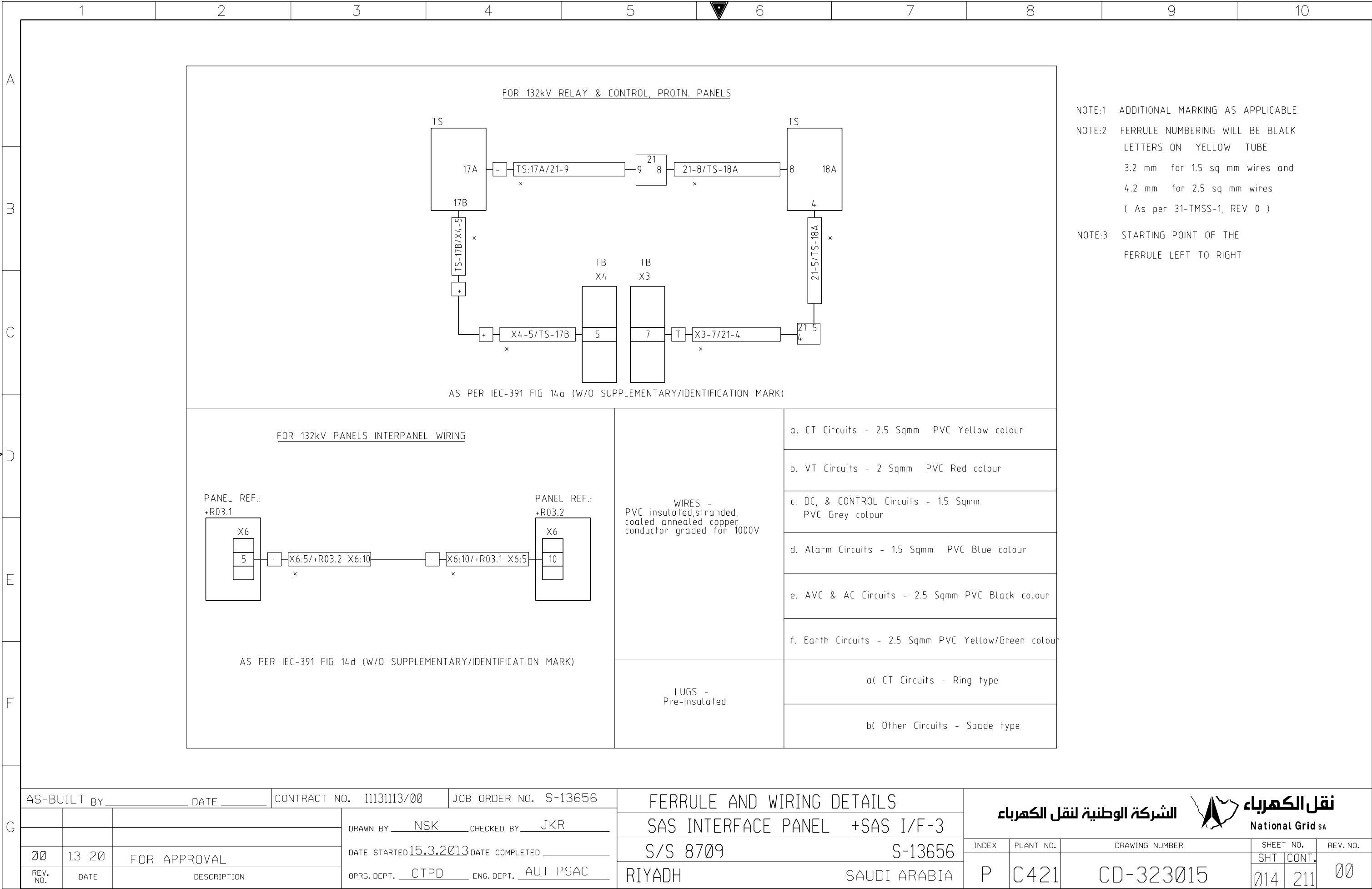
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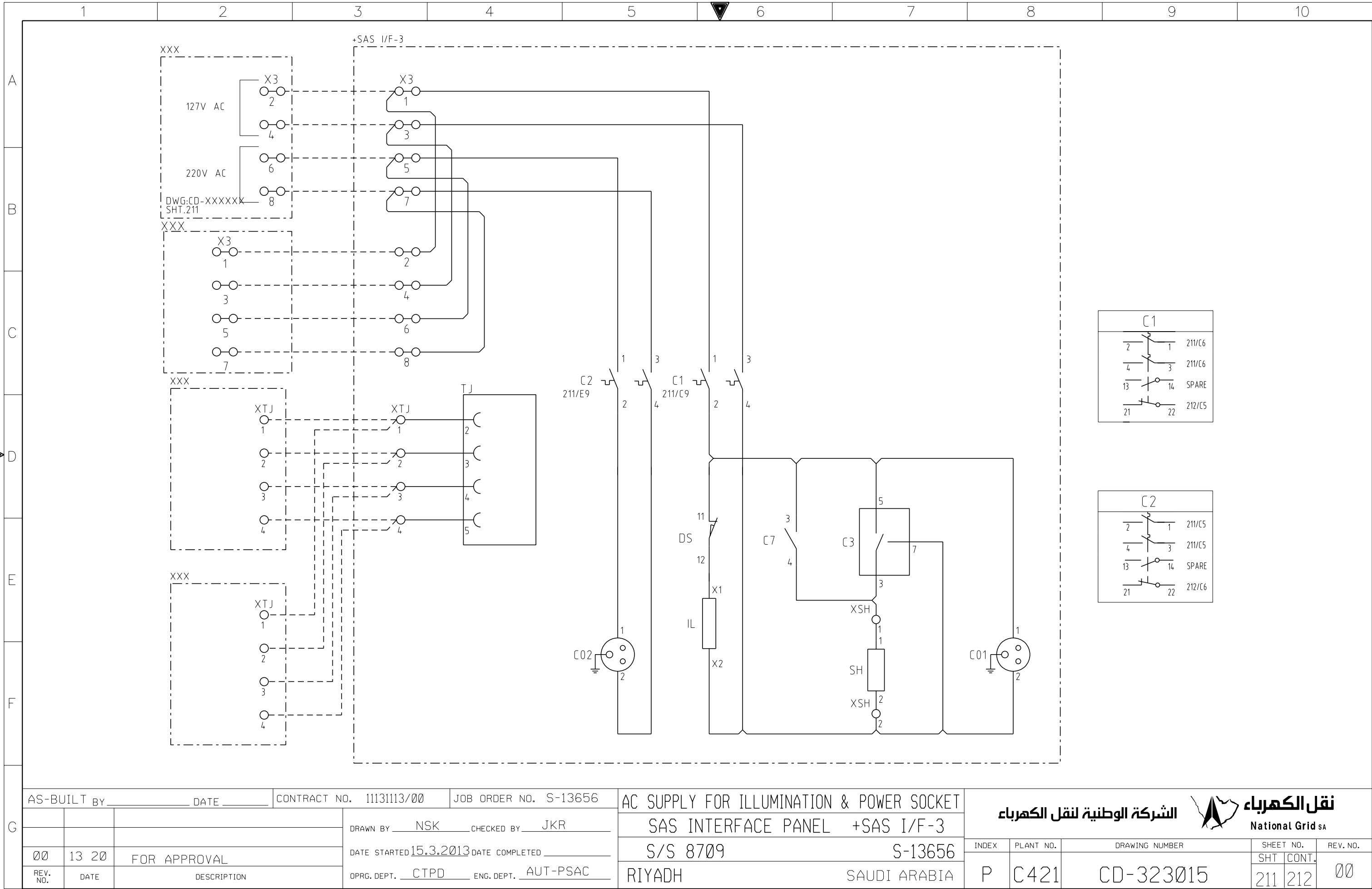
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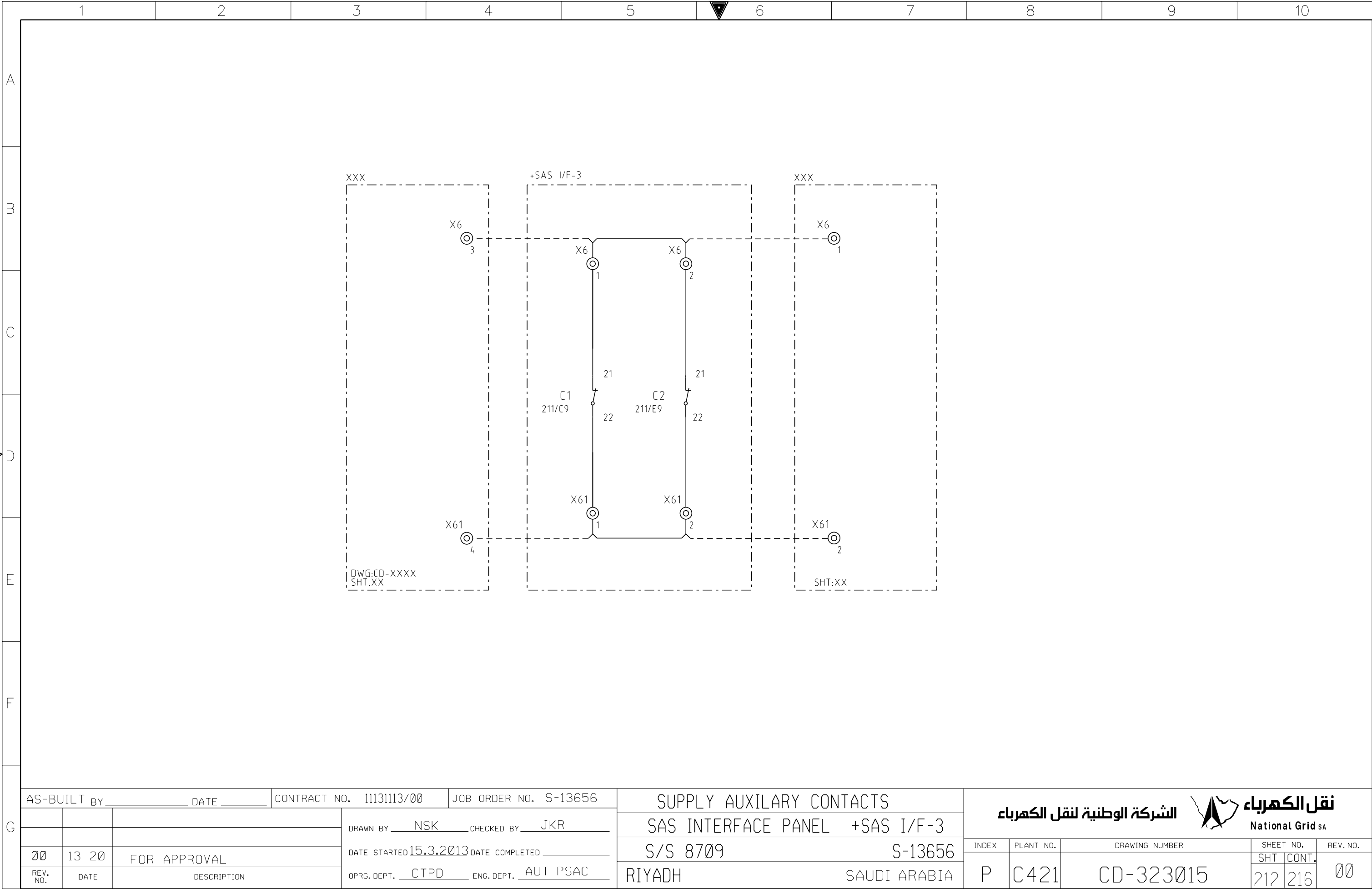
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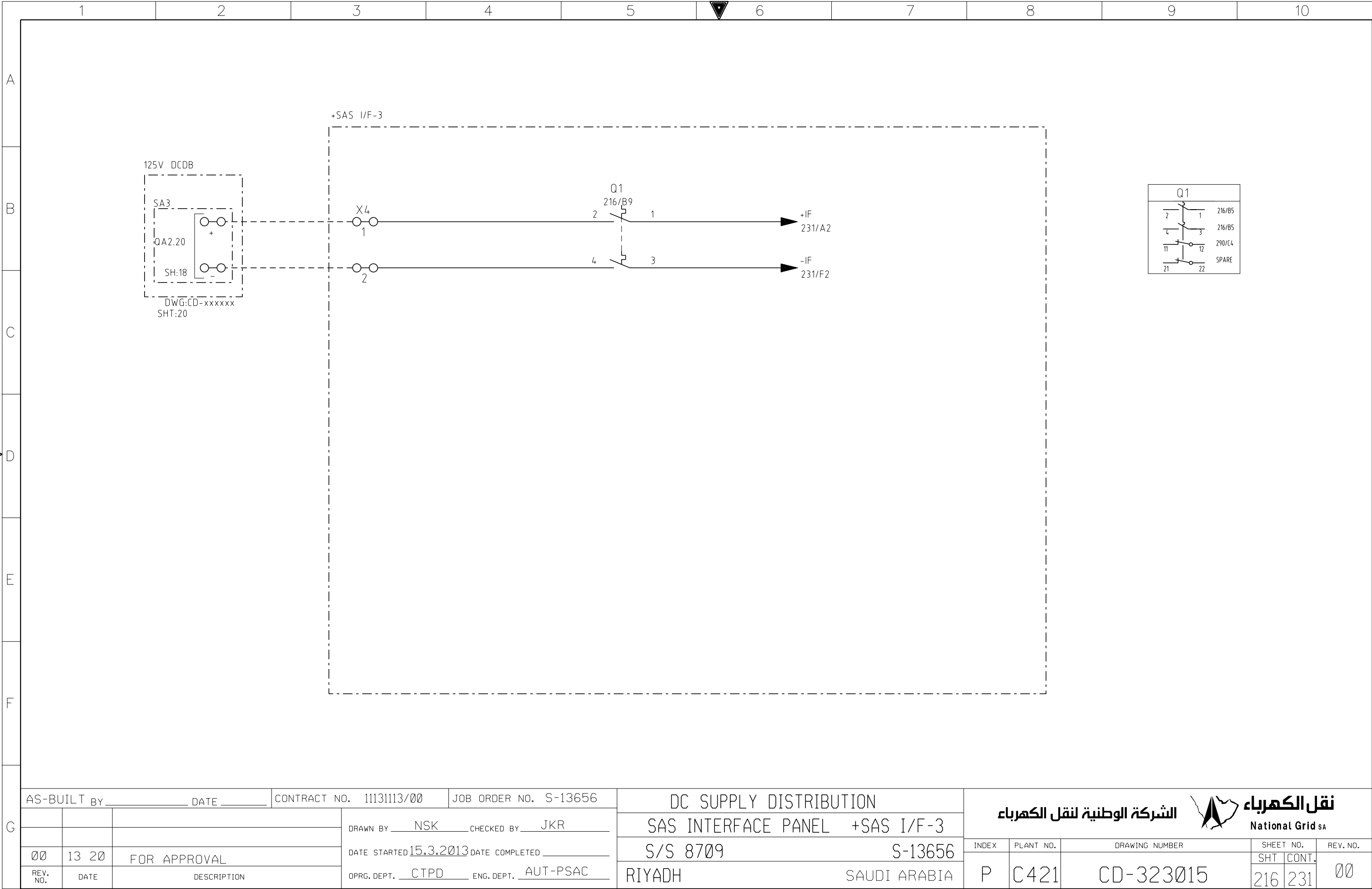
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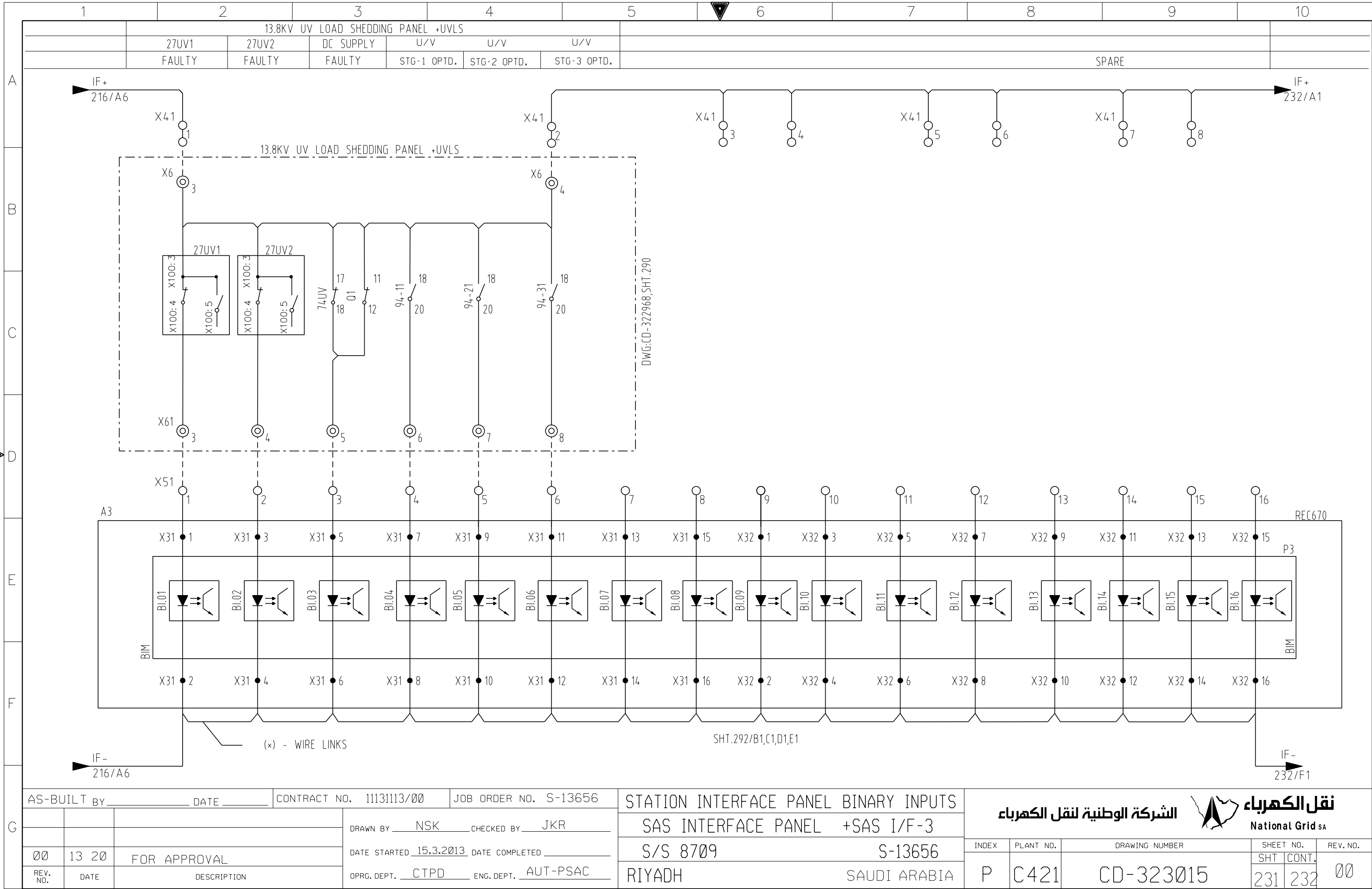
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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMON LEGENDS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>			
			DRAWN BY <u>NSK</u> CHECKED BY <u>JKR</u>		SAS INTERFACE PANEL +SAS I/F-3		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
			DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____		S/S 8709 S-13656					SHT	CONT.
00	13 20	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA	P	C421	CD-323015	013	014
REV. NO.	DATE	DESCRIPTION									

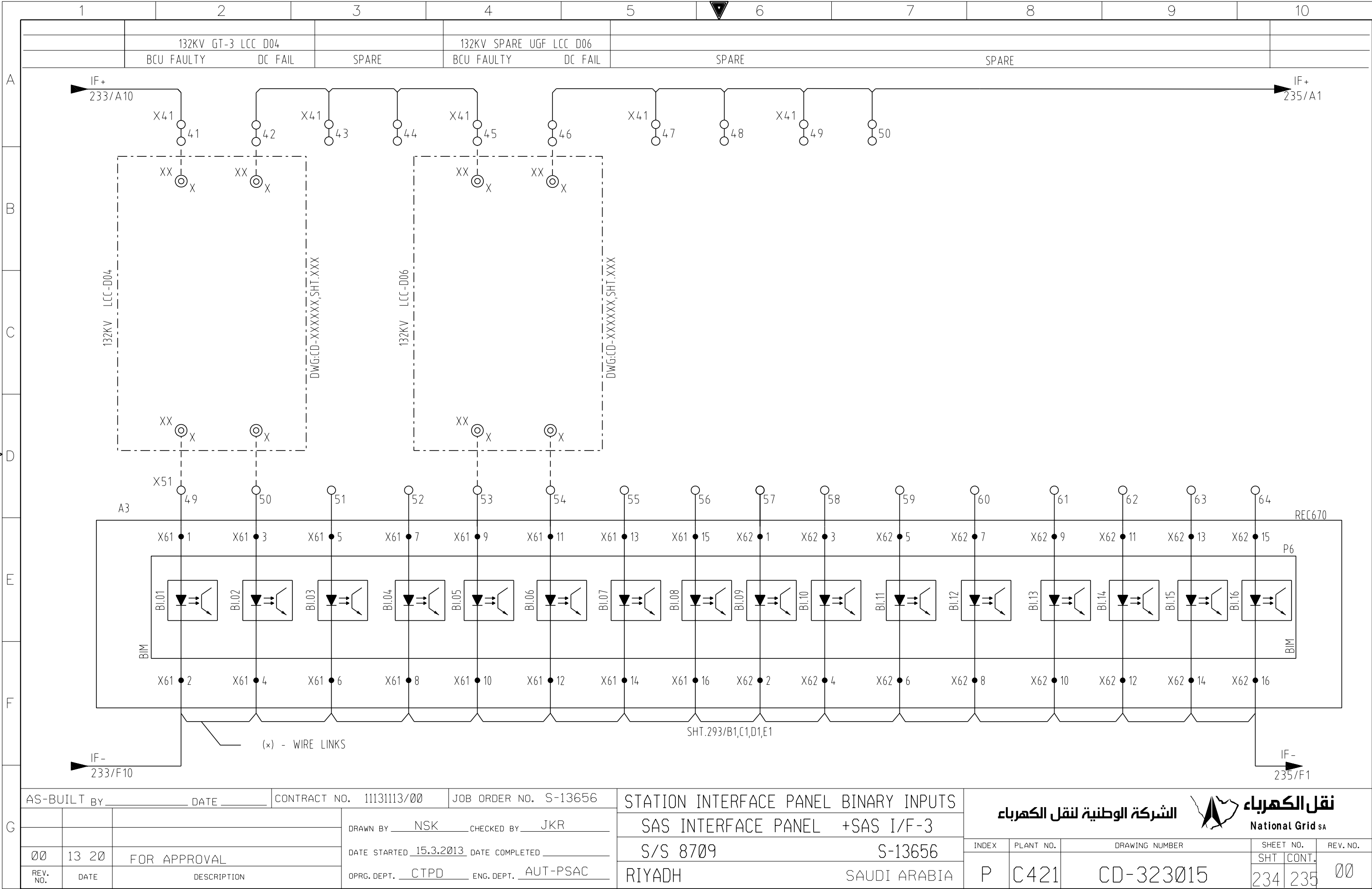


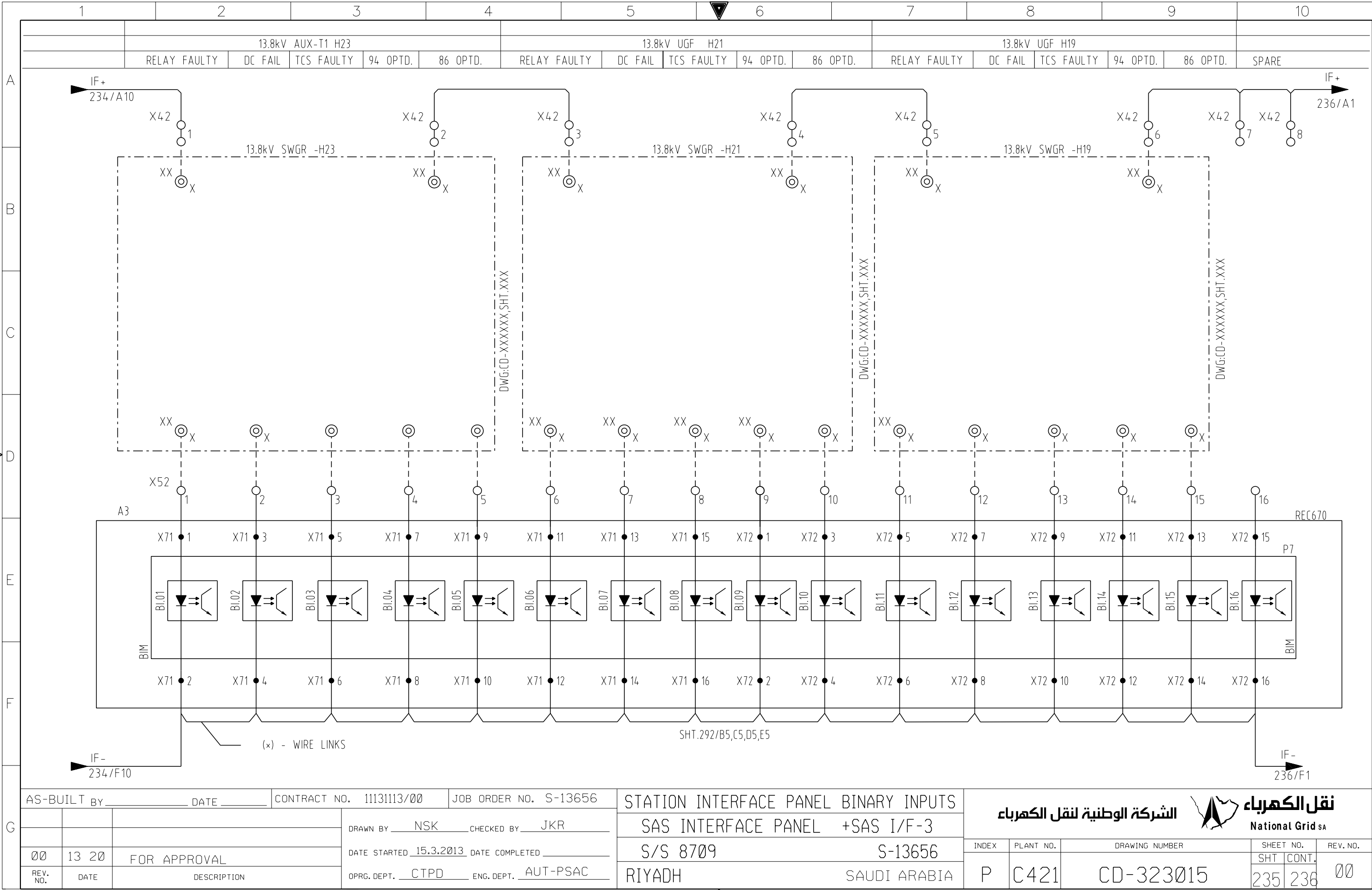


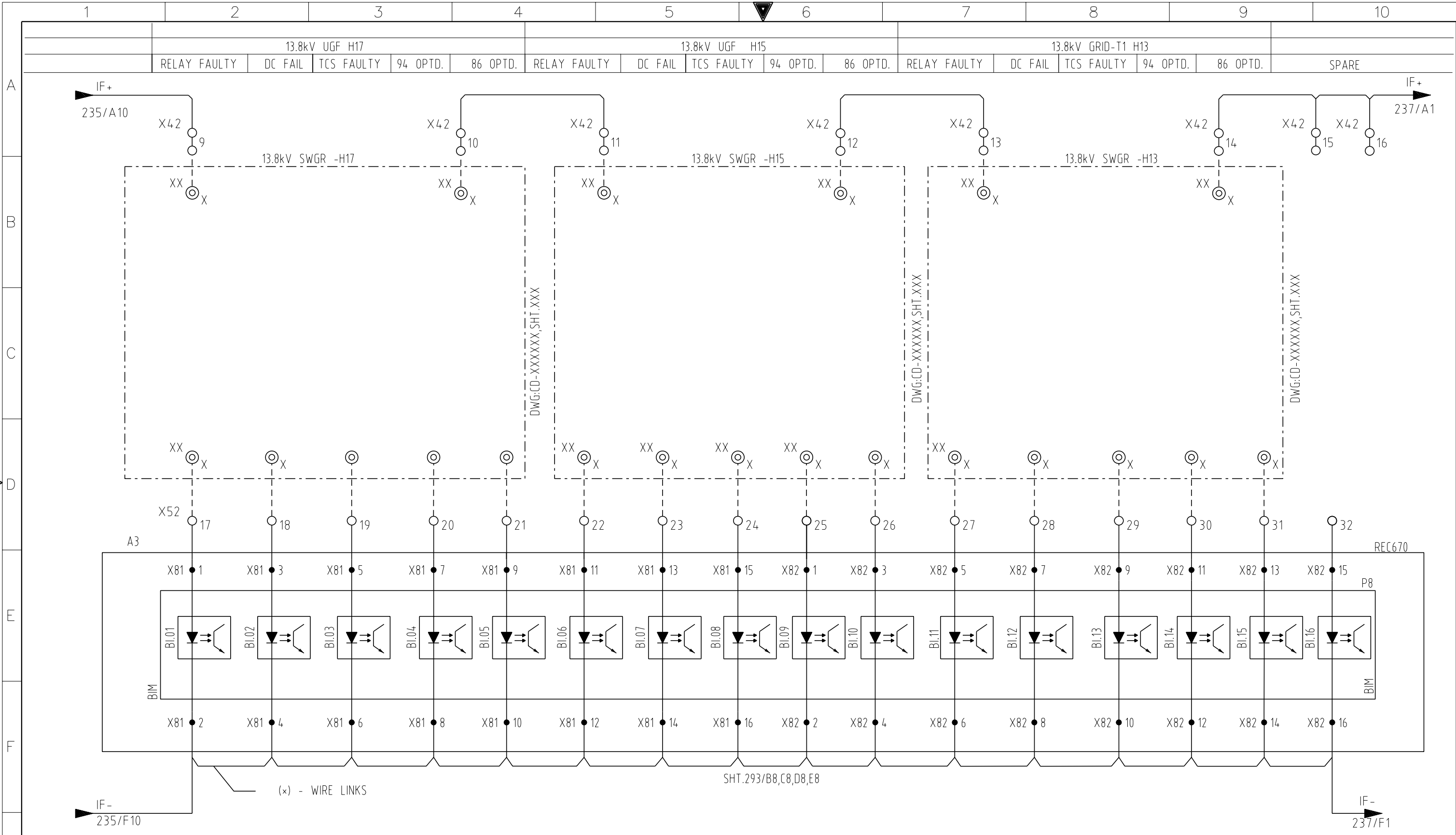





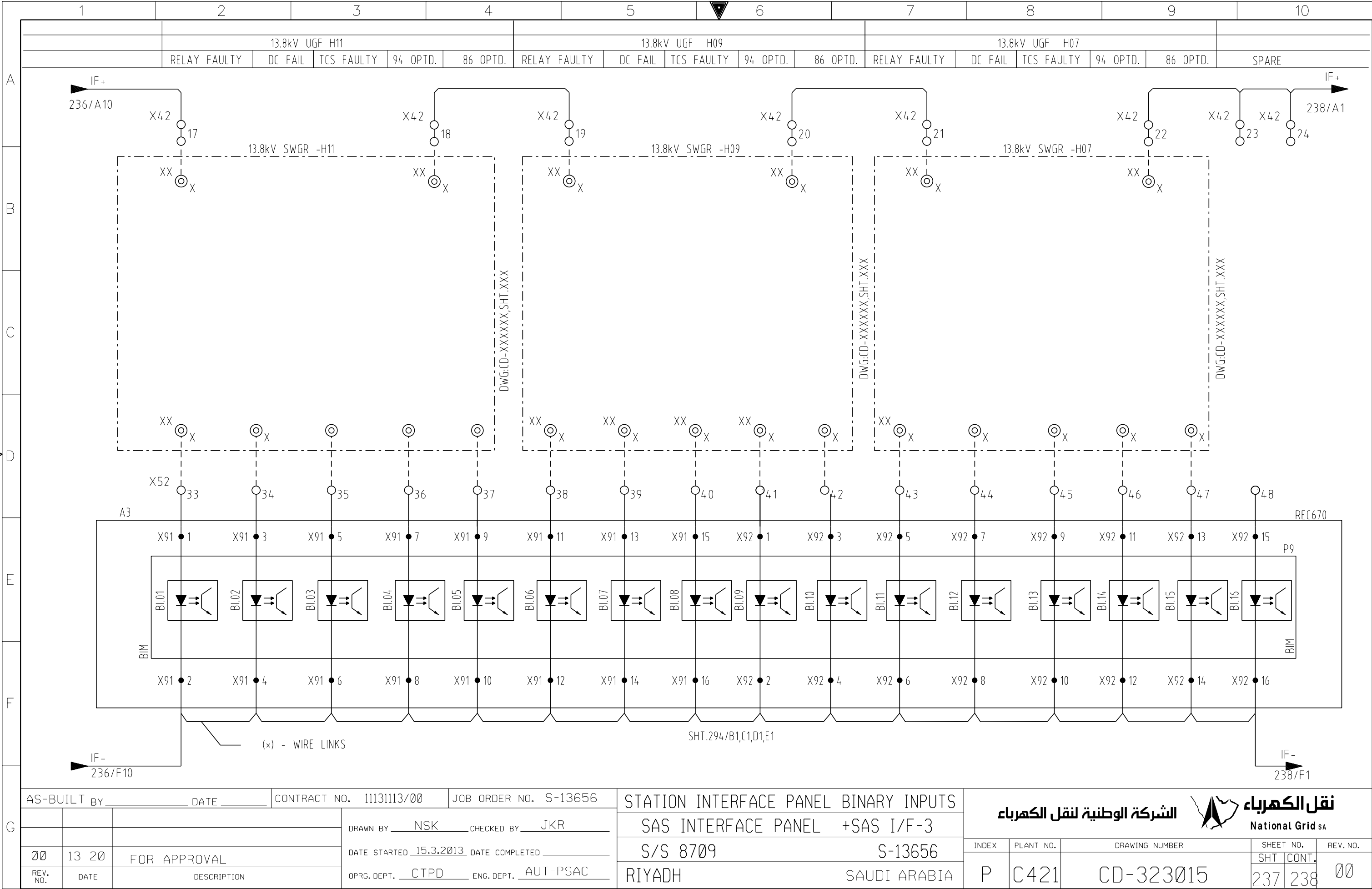








G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		STATION INTERFACE PANEL BINARY INPUTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
				DRAWN BY _____ NSK _____ CHECKED BY _____ JKR _____			SAS INTERFACE PANEL +SAS I/F-3		INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 20	FOR APPROVAL	DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____			S/S 8709 S-13656		P	C421	CD-323015	SHT		CONT.	00	
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC _____			RIYADH SAUDI ARABIA					236	237			



AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

DRAWN BY NSK CHECKED BY JKR

DATE STARTED 15.3.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

STATION INTERFACE PANEL BINARY INPUTS

SAS INTERFACE PANEL +SAS I/F-3

S/S 8709

S-13656

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



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INDEX

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DRAWING NUMBER

SHEET NO.

REV. NO.

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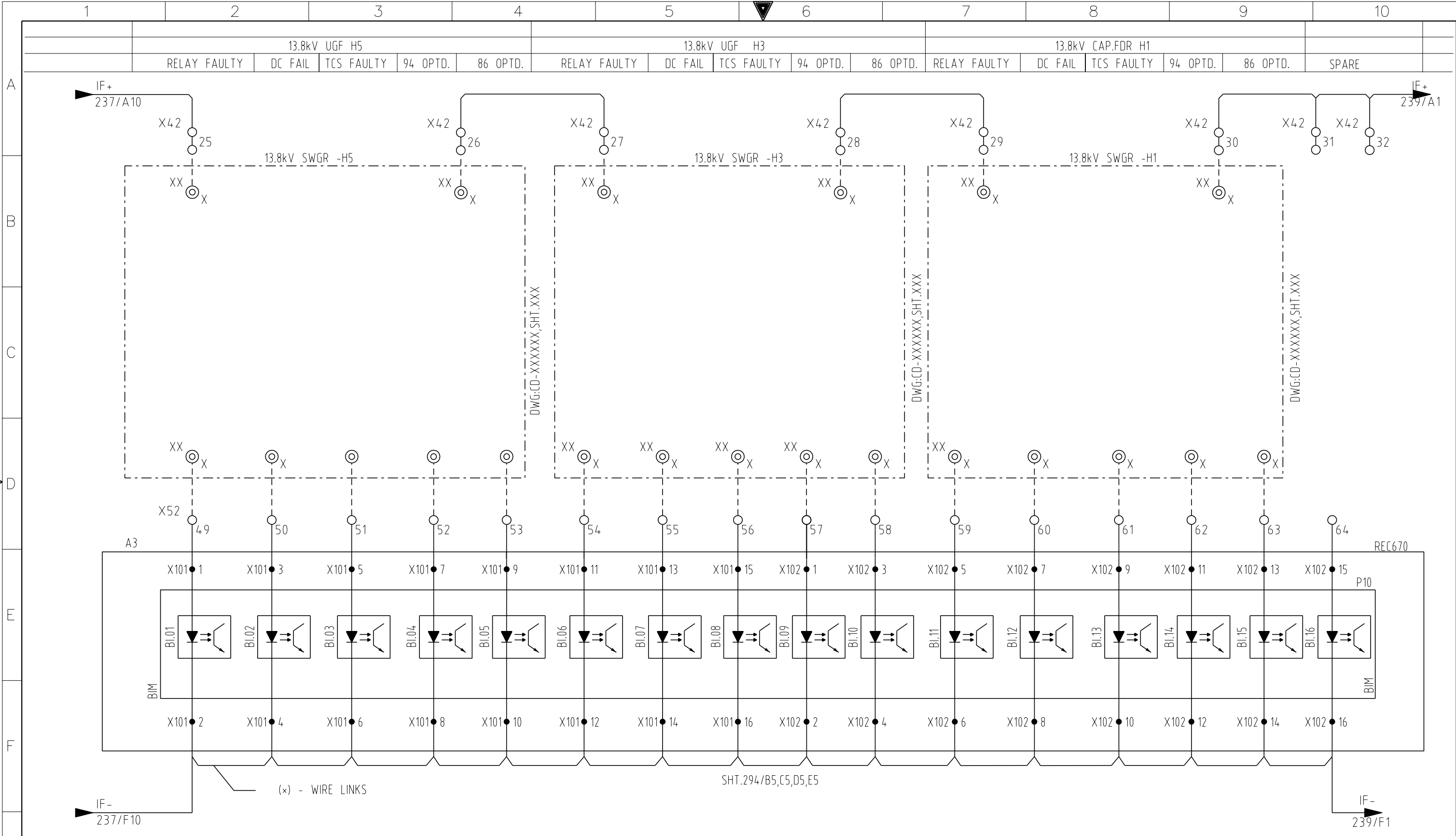
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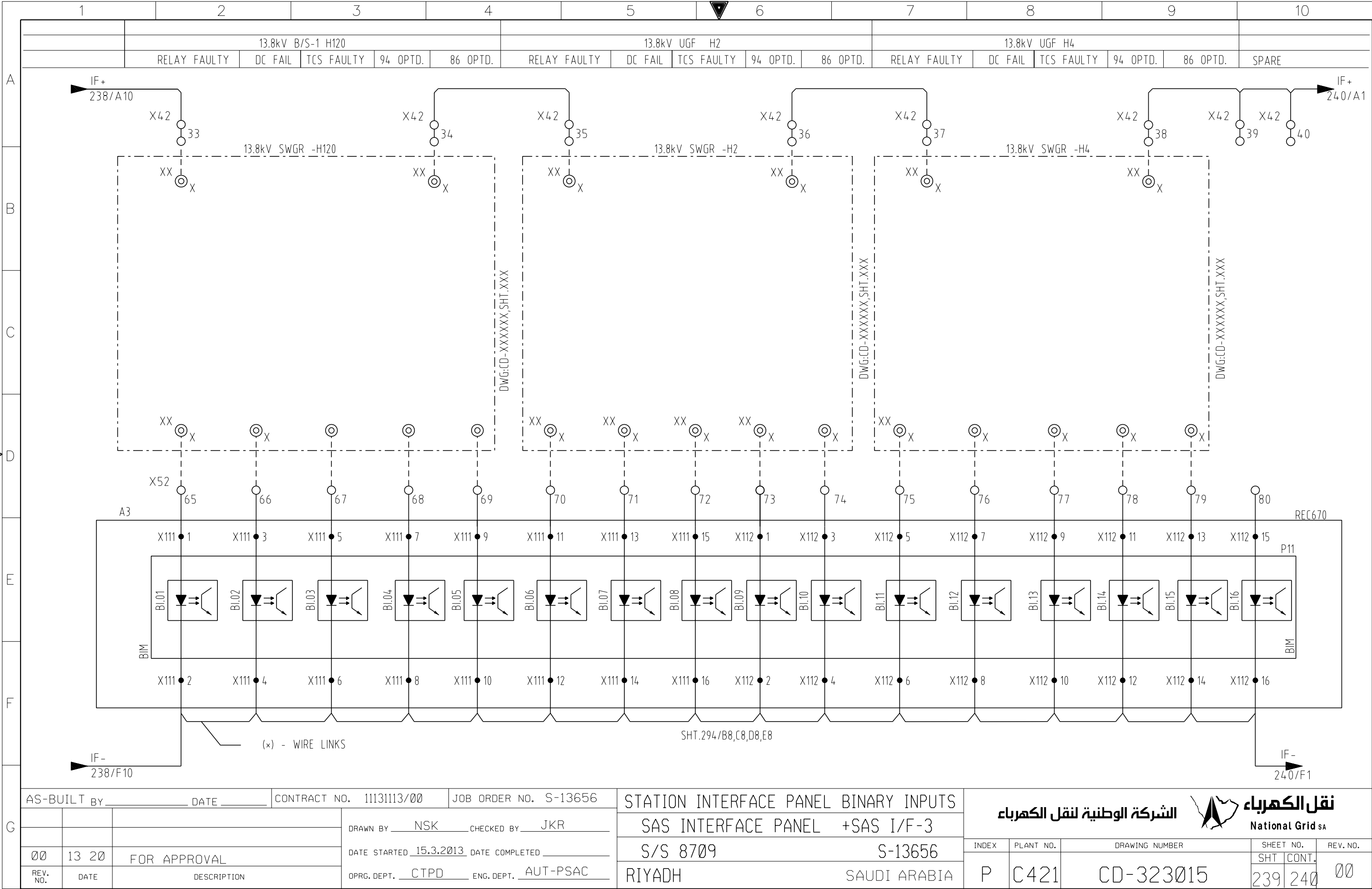
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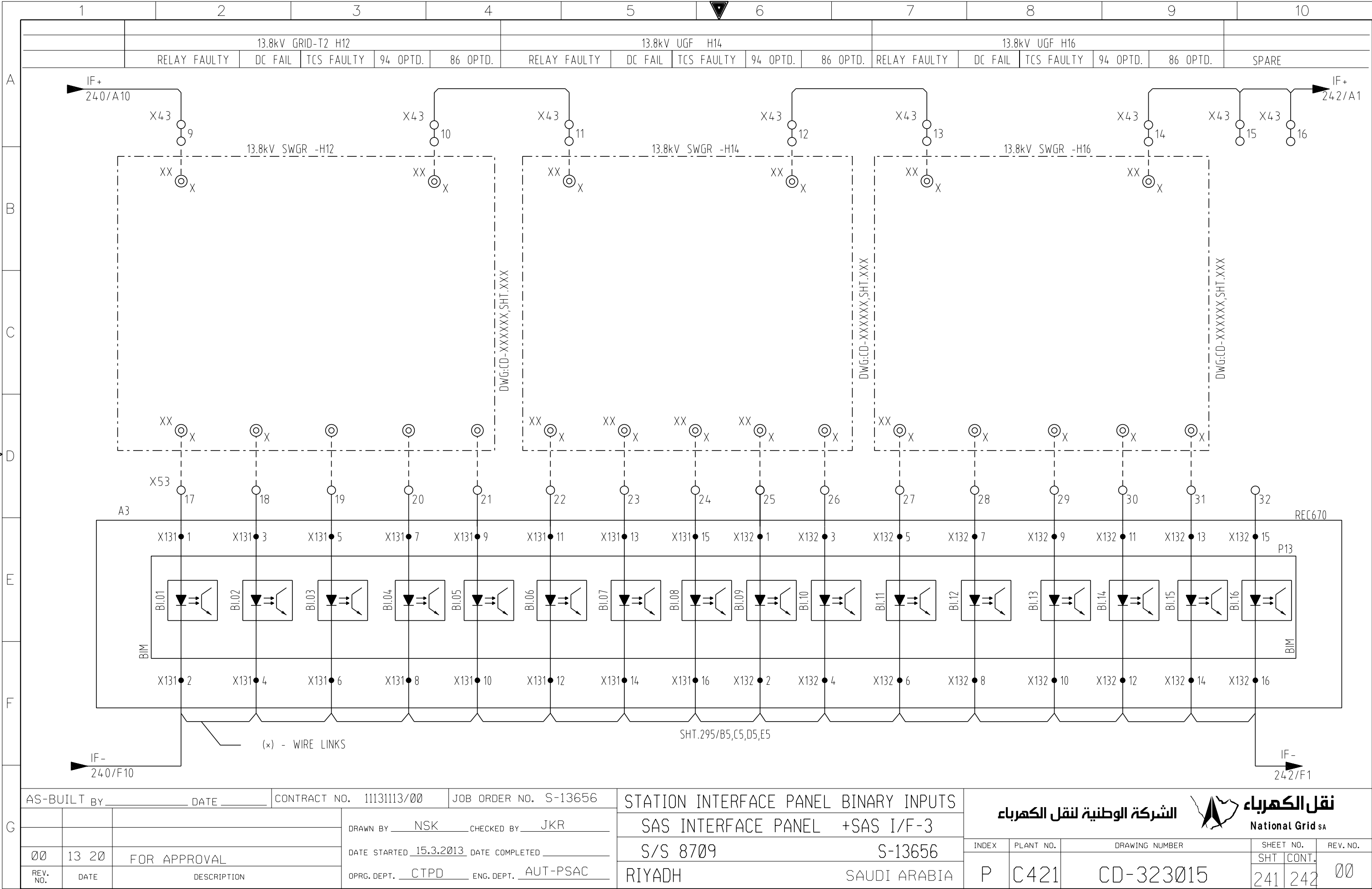
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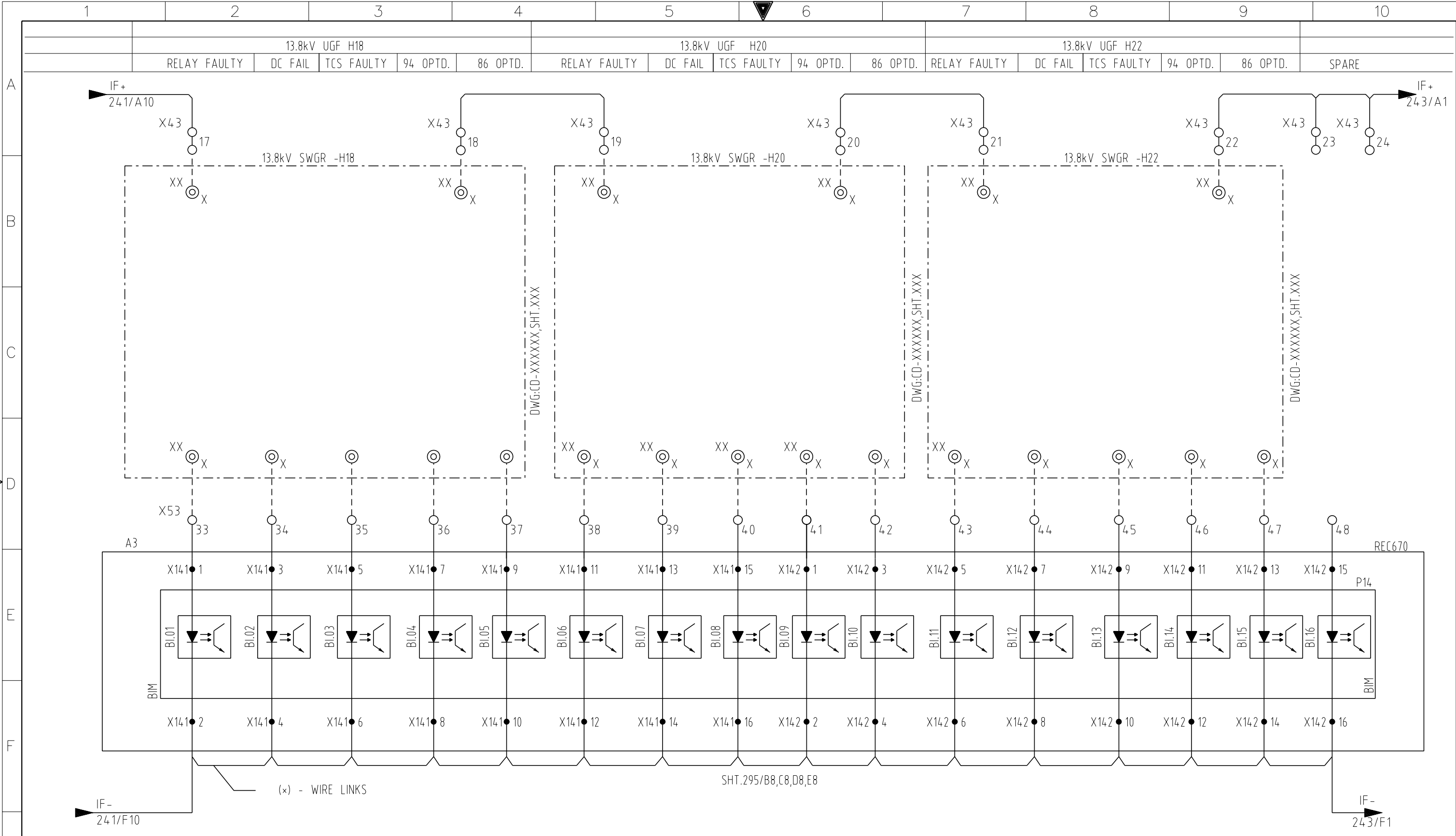



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		STATION INTERFACE PANEL BINARY INPUTS		<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>					
				DRAWN BY <u>NSK</u> CHECKED BY <u>JKR</u>		SAS INTERFACE PANEL +SAS I/F-3								
				DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____		S/S 8709 S-13656		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 20	FOR APPROVAL	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		P	C421	CD-323015		SHT	CONT.	00
	REV. NO.	DATE	DESCRIPTION									238	239	



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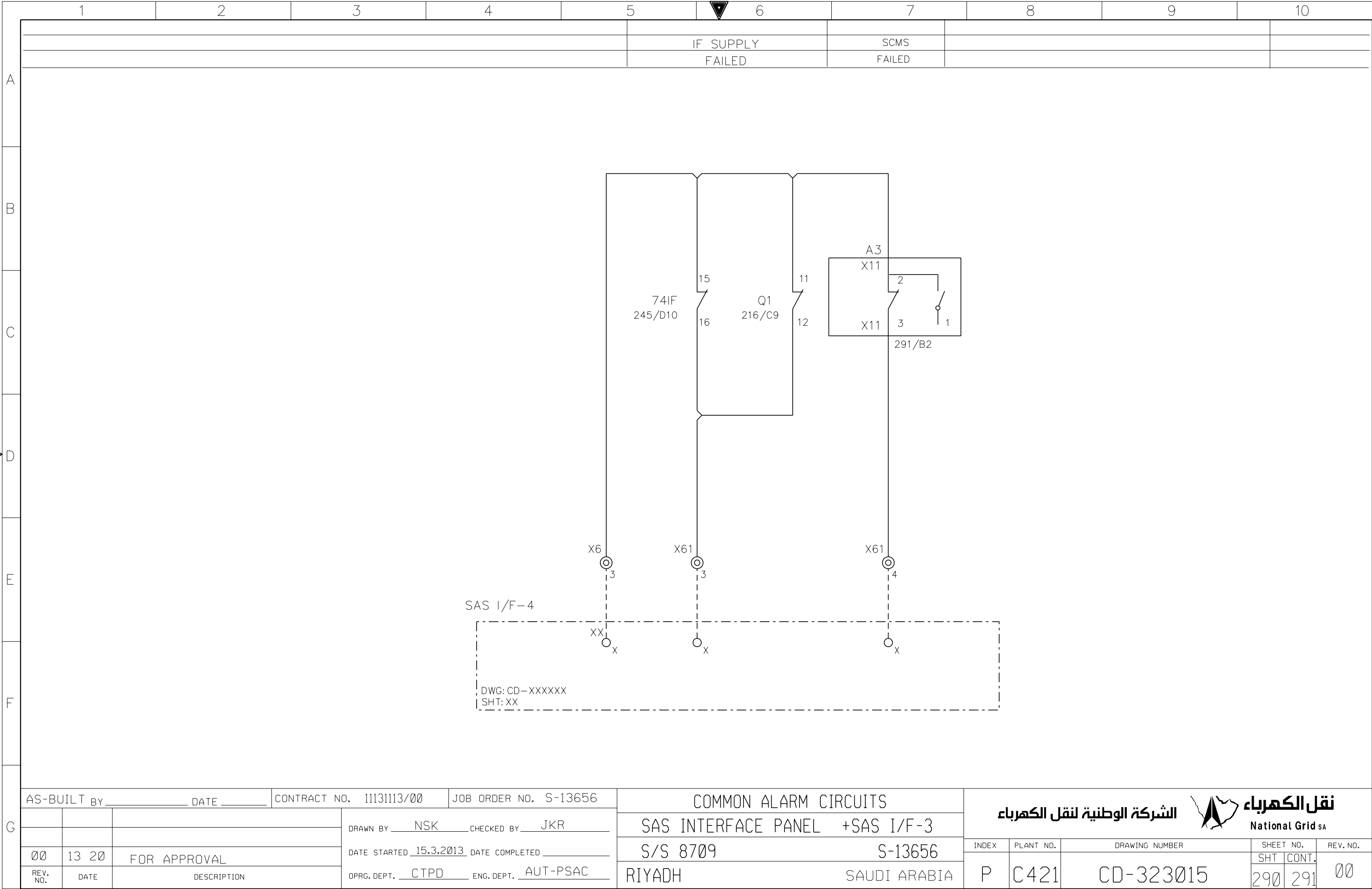




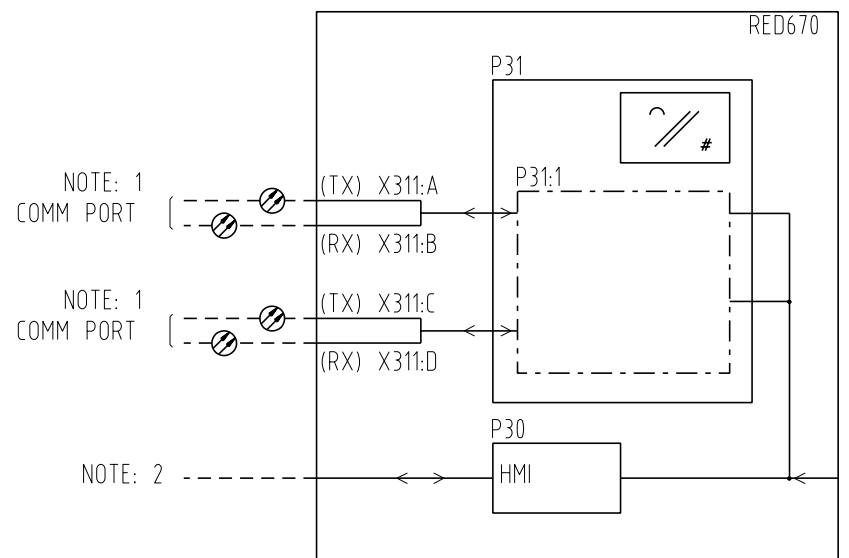
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		STATION INTERFACE PANEL BINARY INPUTS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
					DRAWN BY <u>NSK</u> CHECKED BY <u>JKR</u>		SAS INTERFACE PANEL +SAS I/F-3								
					DATE STARTED <u>15.3.2013</u> DATE COMPLETED _____		S/S 8709 S-13656								
	<u>00</u>	<u>13 20</u>	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	REV. NO.	DATE	DESCRIPTION						P	C421	CD-323015		SHT	CONT.	<u>00</u>

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REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC		RIYADH SAUDI ARABIA																																										

A3

BIM P15

REC670

LOCATION=P15

PLANT ADAPTED CONFIGURATION

X151

+ - - - 1 BI.01 //

- - - 2 BI.02 //

+ - - 3 BI.03 //

- - - 4 BI.04 //

+ - - 5 BI.05 //

- - - 6 BI.06 //

+ - - 7 BI.07 //

- - - 8 BI.08 //

+ - - 9 BI.09 //

- - - 10 BI.10 //

+ - - 11 BI.11 //

- - - 12 BI.12 //

+ - - 13 BI.13 //

- - - 14 BI.14 //

+ - - 15 BI.15 //

- - - 16 BI.16 //

X152

+ - - 1 BI.09 //

- - - 2 BI.10 //

+ - - 3 BI.11 //

- - - 4 BI.12 //

+ - - 5 BI.13 //

- - - 6 BI.14 //

+ - - 7 BI.15 //

- - - 8 BI.16 //

+ - - 9

- - - 10

+ - - 11

- - - 12

+ - - 13

- - - 14

+ - - 15

- - - 16

A3

BIM P16

REC670

LOCATION=P16

PLANT ADAPTED CONFIGURATION

X161

+ - - - 1 BI.01 //

- - - 2 BI.02 //

+ - - 3 BI.03 //

- - - 4 BI.04 //

+ - - 5 BI.05 //

- - - 6 BI.06 //

+ - - 7 BI.07 //

- - - 8 BI.08 //

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- - - 14

+ - - 15

- - - 16

X162

+ - - 1 BI.09 //

- - - 2 BI.10 //

+ - - 3 BI.11 //

- - - 4 BI.12 //

+ - - 5 BI.13 //

- - - 6 BI.14 //

+ - - 7 BI.15 //

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REFERENCE	231/D1	231/D2	231/D3	231/D3	231/D4	231/D4	231/D5	231/D5	231/D6	231/D6	231/D7	231/D8	231/D8	231/D9	231/D9	231/D10	232/D2	232/D2	232/D3	232/D3	232/D4	232/D4	232/D5	232/D5	232/D6	232/D6	232/D7	232/D8	232/D8	232/D9	232/D9	232/D10	233/D2	233/D2	233/D3	233/D3	233/D4	233/D4	233/D5	233/D5	233/D6	233/D6	233/D7	233/D8	233/D8	233/D9	233/D9	233/D10	234/D2	234/D2	<table><tr><td>X51 CONTROL & PROTN.</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr><tr><td>8</td></tr><tr><td>9</td></tr><tr><td>10</td></tr><tr><td>11</td></tr><tr><td>12</td></tr><tr><td>13</td></tr><tr><td>14</td></tr><tr><td>15</td></tr><tr><td>16</td></tr><tr><td>17</td></tr><tr><td>18</td></tr><tr><td>19</td></tr><tr><td>20</td></tr><tr><td>21</td></tr><tr><td>22</td></tr><tr><td>23</td></tr><tr><td>24</td></tr><tr><td>25</td></tr><tr><td>26</td></tr><tr><td>27</td></tr><tr><td>28</td></tr><tr><td>29</td></tr><tr><td>30</td></tr><tr><td>31</td></tr><tr><td>32</td></tr><tr><td>33</td></tr><tr><td>34</td></tr><tr><td>35</td></tr><tr><td>36</td></tr><tr><td>37</td></tr><tr><td>38</td></tr><tr><td>39</td></tr><tr><td>40</td></tr><tr><td>41</td></tr><tr><td>42</td></tr><tr><td>43</td></tr><tr><td>44</td></tr><tr><td>45</td></tr><tr><td>46</td></tr><tr><td>47</td></tr><tr><td>48</td></tr><tr><td>49</td></tr><tr><td>50</td></tr></table>	X51 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PROTN.</td></tr><tr><td>51</td></tr><tr><td>52</td></tr><tr><td>53</td></tr><tr><td>54</td></tr><tr><td>55</td></tr><tr><td>56</td></tr><tr><td>57</td></tr><tr><td>58</td></tr><tr><td>59</td></tr><tr><td>60</td></tr><tr><td>61</td></tr><tr><td>62</td></tr><tr><td>63</td></tr><tr><td>64</td></tr><tr><td>65</td></tr><tr><td>66</td></tr><tr><td>67</td></tr><tr><td>68</td></tr><tr><td>69</td></tr><tr><td>70</td></tr><tr><td>71</td></tr><tr><td>72</td></tr><tr><td>73</td></tr><tr><td>74</td></tr><tr><td>75</td></tr><tr><td>76</td></tr><tr><td>77</td></tr><tr><td>78</td></tr><tr><td>79</td></tr><tr><td>80</td></tr><tr><td>81</td></tr><tr><td>82</td></tr><tr><td>83</td></tr><tr><td>84</td></tr><tr><td>85</td></tr><tr><td>86</td></tr><tr><td>87</td></tr><tr><td>88</td></tr><tr><td>89</td></tr><tr><td>90</td></tr></table>	X51 CONTROL & PROTN.	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	<table><tr><td>INTERNAL 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CKTS.</td></tr><tr><td>1</td></tr><tr><td>2</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr><tr><td>8</td></tr><tr><td>9</td></tr><tr><td>10</td></tr><tr><td>11</td></tr><tr><td>12</td></tr><tr><td>13</td></tr><tr><td>14</td></tr><tr><td>15</td></tr><tr><td>16</td></tr><tr><td>17</td></tr><tr><td>18</td></tr><tr><td>19</td></tr><tr><td>20</td></tr><tr><td>21</td></tr><tr><td>22</td></tr><tr><td>23</td></tr><tr><td>24</td></tr><tr><td>25</td></tr><tr><td>26</td></tr><tr><td>27</td></tr><tr><td>28</td></tr><tr><td>29</td></tr><tr><td>30</td></tr><tr><td>31</td></tr><tr><td>32</td></tr><tr><td>33</td></tr><tr><td>34</td></tr><tr><td>35</td></tr><tr><td>36</td></tr><tr><td>37</td></tr><tr><td>38</td></tr><tr><td>39</td></tr><tr><td>40</td></tr><tr><td>41</td></tr><tr><td>42</td></tr><tr><td>43</td></tr><tr><td>44</td></tr><tr><td>45</td></tr><tr><td>46</td></tr><tr><td>47</td></tr><tr><td>48</td></tr><tr><td>49</td></tr><tr><td>50</td></tr></table>	X41 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REFERENCE	236/D1	236/D2	236/D3	236/D3	236/D4	236/D4	236/D5	236/D5	236/D6	236/D6	236/D7	236/D8	236/D8	236/D9	236/D9	236/D10	237/D2	237/D2	237/D3	237/D3	237/D4	237/D4	237/D5	237/D5	237/D6	237/D7	237/D8	237/D8	237/D9	237/D9	237/D10	238/D2	238/D2	238/D3	238/D3	238/D4	238/D4	238/D5	238/D5	238/D6	238/D6	238/D7	238/D8	238/D8	238/D9	238/D9	238/D10	239/D2	239/D2	<table><tr><td>X52 CONTROL & 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INTERNAL REFERENCE	X42 DC CKTS.	INTERNAL REFERENCE	X53 CONTROL & PROTN.	INTERNAL REFERENCE	X53 CONTROL & PROTN.	INTERNAL REFERENCE	X43 DC CKTS.	INTERNAL REFERENCE	X4 DC CKTS.	REFERENCE	X61 ALM. CKT.
236/A2	1	241/D1	1	244/D3	51	241/A2	1	216/B3	1	212/E5	1
236/A8	2	241/D2	2	244/D3	52	241/A8	2	216/B3	2	212/E5	2
236/A8	3	241/D3	3	244/D4	53	241/A8	3	SPARE	3	290/E5	3
236/A8	4	241/D3	4	244/D4	54	241/A8	4	SPARE	4	290/E6	4
236/A9	5	241/D4	5	244/D5	55	241/A9	5	SPARE	5	SPARE	5
236/A9	6	241/D4	6	244/D5	56	241/A9	6			SPARE	6
236/A9	7	241/D5	7	244/D6	57	241/A9	7			SPARE	7
236/A9	8	241/D5	8	244/D6	58	241/A9	8			SPARE	8
237/A2	9	241/D6	9	244/D7	59	242/A2	9			SPARE	9
237/A8	10	241/D6	10	244/D8	60	242/A8	10				
237/A8	11	241/D7	11	244/D8	61	242/A8	11				
237/A8	12	241/D8	12	244/D9	62	242/A8	12				
237/A9	13	241/D8	13	244/D9	63	242/A9	13				
237/A9	14	241/D9	14	244/D10	64	242/A9	14				
237/A9	15	241/D9	15	SPARE	65	242/A9	15				
237/A9	16	241/D10	16	SPARE	66	242/A9	16				
238/A2	17	242/D2	17	SPARE	67	243/A2	17				
238/A6	18	242/D2	18	SPARE	68	243/A6	18				
238/A7	19	242/D3	19	SPARE	69	243/A7	19				
238/A7	20	242/D3	20	SPARE	70	243/A7	20				
238/A8	21	242/D4	21	SPARE	71	243/A8	21				
238/A8	22	242/D4	22	SPARE	72	243/A8	22				
238/A8	23	242/D5	23	SPARE	73	243/A8	23				
238/A8	24	242/D5	24	SPARE	74	243/A8	24				
239/A2	25	242/D6	25	SPARE	75	244/A2	25				
239/A6	26	242/D6	26	SPARE	76	244/A6	26				
239/A7	27	242/D7	27	SPARE	77	244/A7	27				
239/A7	28	242/D8	28	SPARE	78	244/A7	28				
239/A8	29	242/D8	29	SPARE	79	244/A8	29				
239/A8	30	242/D9	30	SPARE	80	244/A8	30				
239/A8	31	242/D9	31			244/A8	31				
239/A8	32	242/D10	32			244/A8	32				
240/A2	33	243/D2	33			235/A2	33				
240/A6	34	243/D2	34			235/A6	34				
240/A7	35	243/D3	35			235/A7	35				
240/A7	36	243/D3	36			235/A7	36				
240/A8	37	243/D4	37			235/A8	37				
240/A8	38	243/D4	38			235/A8	38				
240/A8	39	243/D5	39			235/A8	39				
240/A8	40	243/D5	40			235/A8	40				
SPARE	41	243/D6	41			SPARE	41				
SPARE	42	243/D6	42			SPARE	42				
SPARE	43	243/D7	43			SPARE	43				
SPARE	44	243/D8	44			SPARE	44				
SPARE	45	243/D8	45			SPARE	45				
SPARE	46	243/D9	46			SPARE	46				
SPARE	47	243/D9	47			SPARE	47				
SPARE	48	243/D10	48			SPARE	48				
SPARE	49	244/D2	49			SPARE	49				
SPARE	50	244/D2	50			SPARE	50				

REFERENCE	X6 ALM. CKT.	INTERNAL REFERENCE	XSH SPACE HEATER	INTERNAL REFERENCE	XTJ T.JACK
212/C5	1	211/E7	1	211/D3	1
212/C5	2	211/F7	2	211/D3	2
290/E5	3	SPARE	3	211/D3	3
				211/D3	4
				SPARE	5